Aerosol Wind LIDAR Verification & Validation Data Set

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Challenge

- What challenge or issue was your project focused on addressing?
  - Providing an understood and known set of data for the verification and validation of a new instrument
  - Converting DAPS data to the new system to be compared to the new data
- What is the history of the challenge?
  - No previous history of this challenge because this was not necessary in the development stage
- What has been done to address that challenge in the past?
  - It's never been done before

Objective

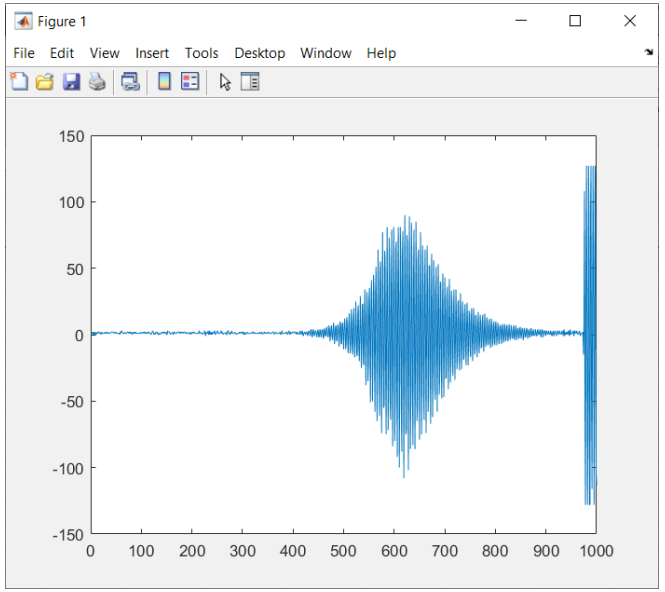
- Research project objective:
  - To study the planetary boundary layer's wind flow by obtaining 3 dimensional wind measurements.
- My specific work objective :
  - Transform a data set from the existing DAWN instrument and structure it to be compatible with the new Common Wind Platform acquisition and analysis software
  - Provide a dataset for algorithm testing and verification.
- Work ties in with the overarching project research objective via:
  - Data verification of the new sensor's output
  - Conversion to advanced system/software/processors allows for optimal data evaluation/manipulation/calculations

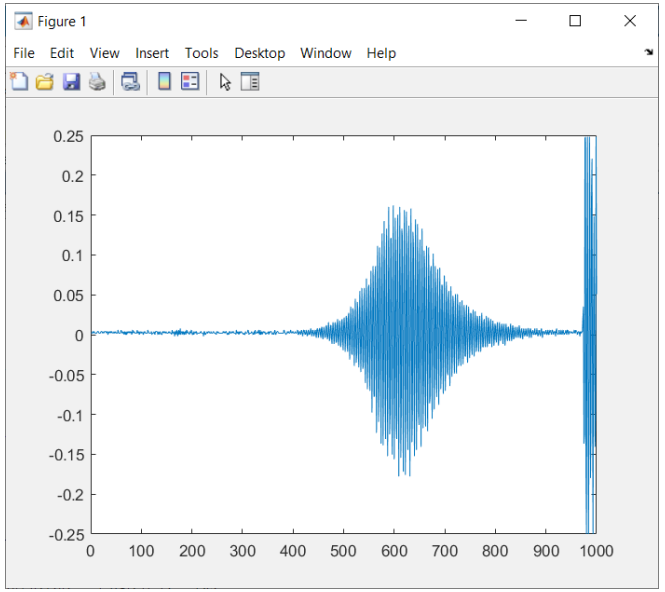
Approach

- What I did?
  - Wrote code to converted the DAWN's old DAPS data set into the new CWP SQL database
- How I did it?
  - Familiarization with versions of MATLAB and SQL code used and its limitations
  - Used MATLAB to write code to automate the translation of the old data set into the new database
- How it contributes to my research objectives?
- This known and well understood data set provides a baseline for verifying, testing, and debugging the new CWP software being developed to handle the DAWN, Wind-SP, and AWP aerosol wind LIDAR instruments.

Results & Analysis

- Result: Data conversion was successful but optimizing speed of conversion was tricky
- Expected: no difference between the old data set and data set in SQL's speed of conversion.





Summary

- Summary: Discovered bottlenecks, Conversion is not quite the same
- Project direction was unchanged with acknowledgement of bottlenecks

Next Steps/Outlook/Future Work

- What would you do if you had 4 more weeks?
  - I would develop the code to improve the current software
- What would you do if you had 4 more months?
  - I would work on collecting new datasets and help with the analysis
- If I continued working on the team, I would most likely work on different sections of the code and eventually help with collecting new datasets, because of the finite nature of the task

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